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10/678,839	10/03/2003	Toan Thanh Le	129836	1144

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Patrick W. Rasche
Armstrong Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102

EXAMINER	
RAMIREZ, JOHN FERNANDO	

ART UNIT	PAPER NUMBER
3737	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/678,839	**Applicant(s)** LE ET AL.	
	Examiner John F. Ramirez	**Art Unit** 3737	

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/04/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 11-18, 21-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

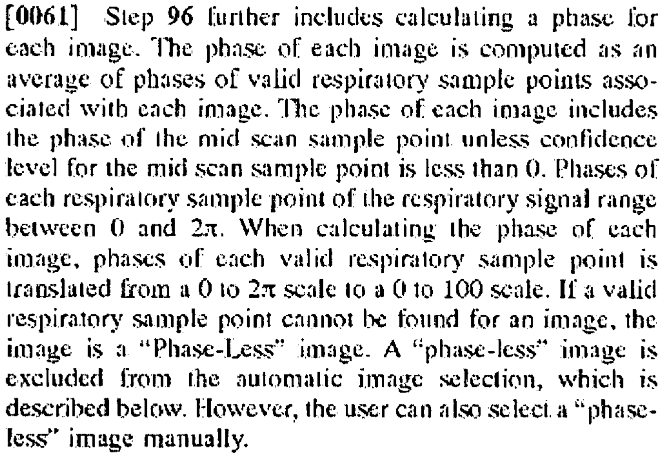
DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8, 11-18 and 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1, 11, 21-22 and 24, it is unclear as to how is calculated the phase of each generated image. Therefore, it is also unclear as to how is sorted the generated images based on the specify target phase to generate a series of images. On page 6 of the specifications of the application publication, in paragraph [0061] specifically states:



[0061] Step 96 further includes calculating a phase for each image. The phase of each image is computed as an average of phases of valid respiratory sample points associated with each image. The phase of each image includes the phase of the mid scan sample point unless confidence level for the mid scan sample point is less than 0. Phases of each respiratory sample point of the respiratory signal range between 0 and 2π. When calculating the phase of each image, phases of each valid respiratory sample point is translated from a 0 to 2π scale to a 0 to 100 scale. If a valid respiratory sample point cannot be found for an image, the image is a "Phase-Less" image. A "phase-less" image is excluded from the automatic image selection, which is described below. However, the user can also select a "phase-less" image manually.

Contrary to what is stated on pages 2 and 3 in the remarks dated June 4, 2007. Applicant's alleges that "calculating a first phase of one of the images based on a plurality of points of a respiratory cycle of a motion of the object" as it is claimed. The examiner of record respectfully disagrees with applicant's comments. As stated above, the specifications specifically disclose that the phase of each image is computed as an **average of phases** of valid respiratory sample points associated with each image.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 6, 7, 11, 16, 17, 21, 22, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Okerlund et al. (US 6,526,117).

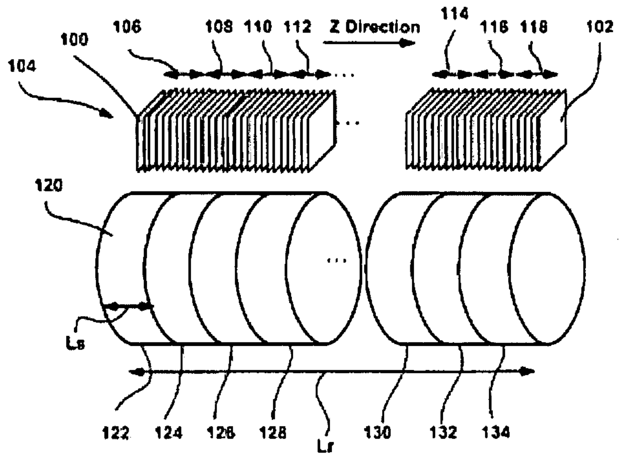


Fig. 3

With respect to claims 1, 6 and 7, Okerlund et al. teaches all the structures as set forth below. The method for retrospective internal gating, comprising: scanning a patient to obtain projection data; generating images from the projection data; generating a signal representing information regarding a physiological cycle of an object within the patient; specifying at least one target phase based on which the images can be sorted; and sorting the images based on the target phase within a cycle of motion of the object to generate at least one series of images, validating the motion of the object by checking at least one of: whether each cycle of the motion of the object is within a percentage of an average cycle of the motion of the object; and whether an amplitude of each cycle of the motion of the object is within a percentage of an average amplitude of the motion of the object, calculating phases of the images, would be inherently met by the disclosure.

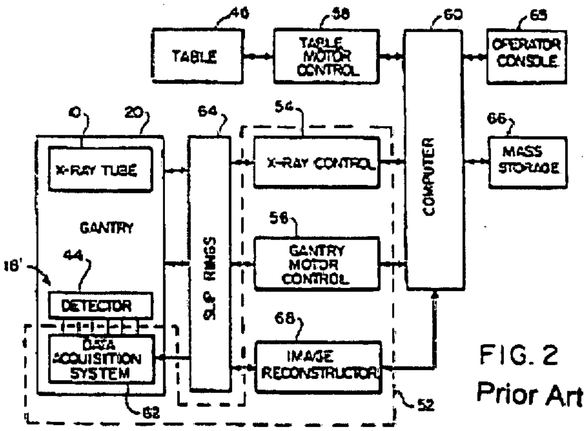


FIG. 2
Prior Art

With respect to claims 11, 16, 17, 21, 22, and 24, Okerlund et al. discloses a CT system for imaging a moving object within a patient (see abstract), the system comprising: a scanner configured to acquire projection data of the patient; an image reconstructor (68) configured to generate images corresponding to the projection data; and a controller (52) configured to receive a signal representing information regarding a motion of the object; enable a user (65) to specify at least one target phase (col. 11, lines 45-60); and sort the images (see Figures 2 and 4) based on the target phase within a cycle of the motion of the object to generate at least one series of images (see abstract) , the controller is further configured to validate the motion of the object by checking at least one of: whether each cycle of the motion of the object is within a percentage of an average cycle of the motion of the object (col. 3, lines 49-61), and whether an amplitude of each cycle of the motion of the object is within a percentage of an average amplitude of the motion of the object (col. 3, lines 49-61), and computes phases of the images (col. 10, lines 31-47), a computer-readable medium (60, 66) encoded with a program configured to instruct the system with the steps mentioned above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-5, 8, 12-15, 18, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okerlund et al. in view of Kaufman et al. (US 7,006,862), in further view of Heuscher et al. (US 2003/0007593)

In reference to claims 2-4, 12-14, 23, and 25, Okerlund et al. teaches all the limitations of the claimed subject matter except for mentioning specifically the steps of selecting a series of images from the at least one series of images, the selected series of images displaying a least amount of tissue motion and selecting one image in each group, the image having a phase that lies within a target phase and a phase tolerance.

Concerning claims 5, 8, 15, and 18, Okerlund et al., does not disclose that each series of images, determining a start scan time, a mid scan time, and an end scan time for each of the images; determining a mid scan sample point for each of the images; determining, for each of the images, additional sample points symmetrically located around the mid scan sample point; and computing a phase of each of the images by performing one of: averaging phases of the mid scan sample point and of at least one of the additional sample points; and averaging phases of at least one of the additional sample points.

However, the steps of selecting a series of images from the at least one series of images, the selected series of images displaying a least amount of tissue motion and selecting one image in each group, the image having a phase that lies within a target phase and a phase tolerance, and is near to a middle of an acquisition period of a scan of the patient, determining a start scan time, a mid scan time, and an end scan time for each of the images; determining a mid scan sample point for each of the images; determining, for each of the images, additional sample points symmetrically located around the mid scan sample point; and computing a phase of each of the images by performing one of: averaging phases of the mid scan sample point and of at least one of the additional sample points; and averaging phases of at least one of the additional sample points are conventional in the art by the teachings of Kaufman et al. and Heuscher et al.

The Kaufman et al. patent teaches the steps of selecting a series of images from the at least one series of images, the selected series of images displaying a least amount of tissue motion and selecting one image in each group, the image having a phase that lies within a target phase and a phase tolerance (see Figure 17).

Moreover, the Heuscher et al. patent teaches the steps of that each series of images, determining a start scan time, a mid scan time, and an end scan time for each of the images; determining a mid scan sample point for each of the images; determining, for each of the images, additional sample points symmetrically located around the mid scan sample point; and computing a phase of each of the images by performing one of: averaging phases of the mid scan sample point and of at least one of the additional sample points; and averaging phases of at least one of the additional sample points in Figures 2 and 4.

Based on the above observations, for a person of ordinary skill in the art modifying the method disclosed by Okerlund et al., with the above discussed enhancements would have been considered obvious because such modifications would have a great effect upon image quality by improving spatial resolution of images of moving anatomy.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JFR

BRIAN L. CASLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700